

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board

Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte HITOSHI YOKOYAMA, KEIJI MIYATA, HIDEO SUGANO,  
AND HARUO TSUMURA

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Appeal No. 2001-1725  
Application 09/009,536

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HEARD: APRIL 10, 2002

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Before PAK, MOORE, and POTEATE, Administrative Patent Judges.

MOORE, Administrative Patent Judge.

**DECISION ON APPEAL**

This is an appeal under 35 U.S.C. § 134 from a final rejection of claims 3-5 and 7-14, all of the claims pending in this application. Claims 1, 2, and 6 have been canceled.

### CLAIMS

Claim 14, which is representative of the subject matter on appeal, is reproduced below:

14. A process for preparing a fermented soybean milk comprising:  
contacting dehulled and dehypocotyl whole soybeans with warm or hot water;  
removing warm or hot water-soluble component from the soybeans;  
pulverizing the soybeans to make a slurry;  
removing insoluble component from the slurry to make a soybean milk,  
inoculating a lactic acid bacterium of the genus *Bifidobacterium*, *Lactobacillus bulgaris* and one strain selected from the group consisting of *Lactobacillus acidophilus* and *Lactobacillus casei* into the soybean milk,  
adding one or more saccharides which can be utilized by the lactic acid bacterium to the soybean milk, and  
fermenting the soybean milk to produce the fermented soybean milk.

### THE REFERENCES

In rejecting the appealed claims under 35 U.S.C. §103, the Examiner relies on the following references:

Matsuura et al. (Matsuura)	5,597,594	Jan. 28, 1997
Yang et al. (Yang)	5,711,977	Jan. 27, 1998
Y. Katsunobu, Patent Abstracts of Japan, JP 07 184540, July 25, 1995 (abstract) (Katsunobu).		

### THE REJECTIONS

Claims 3-5 and 7-14 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Matsuura in view of Yang and Katsunobu.

## SUMMARY OF DECISION

On consideration of the entire record, we reverse the rejection of record.

### DISCUSSION

#### The Invention

The Appellants' invention as claimed relates to a process for producing a soybean milk by:

- (1) contacting dehulled and dehypocotyl whole soybeans with warm or hot water
- (2) removing the warm or hot water soluble component
- (3) pulverizing the soybeans to make a slurry
- (4) removing the insoluble component to make a soybean milk
- (5) inoculating selected bacteria into the milk
- (6) adding saccharides, and
- (7) fermenting.

The Appellants assert that this process results in a fermented soybean milk with a greatly improved flavor without the unpleasant flavors of conventional soybean milk (Appeal brief, page 3, line 18, page 4, line 2).

#### The Rejection of Claims 3-5 and 7-14 Under 35 U.S.C. § 103(a)

The Examiner has stated that Matsuura teaches a general process for preparing and fermenting soy milk for end use in food products, which process includes dehulling and soaking soybeans in warm water, removing the soluble fraction, and crushing the soybeans to make a slurry. The fermentation steps include adding a saccharide and a lactic acid bacteria or mixture of bacterium including the *Lactobacillus* species *bulgaricus*, *acidophilus*, and *casei*. (Examiner's Answer, page 3, lines 13 – 18).

Further, Yang is said to teach a combination of *Bifidobacterium* strains in food producing methods, used alone or in combination with two or more lactic acid bacteria including specifically *Lactobacillus* species *bulgaricus*, *acidophilus*, and *casei*. The combination of strains is said to be suggested for a variety of fermentation processes, including soy milk. (Examiner's Answer, page 3, lines 19-24).

The Examiner thus concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the Yang combination of bacterium in the process of Matsuura as they are taught to be useful in fermenting processes. (Examiner's Answer, page 4, lines 7-17).

The Appellants, on the other hand, contend that no prima facie case of obviousness has been established "since the cited references fail to contain some teaching or suggestion to modify or combine the references" (Appeal Brief, page 11, lines 3-4) and that "the cited references in combination do not teach or suggest the invention as a whole, including all the limitations of the claims" (Appeal Brief, page 12, lines 13-14).

We address the motivation component of the prima facie case of obviousness first. It is beyond dispute that to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicants. See In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). When obviousness is based on the modification of a prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference. See

B.F. Goodrich Co. v. Aircraft Braking Sys. Corp., 72 F.3d 1577, 1582, 37 USPQ2d 1314, 1318 (Fed. Cir. 1996).

In the present instance, the Examiner has cited Matsuura as a primary reference, and Yang as a secondary reference. The motivation for combining Yang with Matsuura is Yang's suggestion for use of the bacteria strains "in a variety of fermentation processes, including with soy milk (Examiner's Answer, page 3, lines 23-24). The Appellants take issue with this combination, asserting that "it is important to note that there contain no teachings and suggestions in Matsuura et al., Yang et al. or Katsunobu, which would have led one skilled in the art to expect that the claimed method of the present invention would produce a fermented soybean milk of such superior flavor" (Appeal Brief, page 8, lines 11-14). The Appellants further argue that, as Matsuura is directed to the production of a cheese-like product, it is completely different from the claimed fermented soybean milk with superior flavor (Appeal brief, page 11, lines 12-16).

We look to the prior art as a whole (for purposes of claim 1, Matsuura and Yang) to determine if there is something to suggest the desirability of making the combination. Matsuura teaches the production of a soybean milk (see, e.g. column 4, lines 31 et seq.).<sup>1</sup> Further, Yang teaches the addition of *Bifidobacterium longum* to single or mixed strains of bacteria (such as *Lactobacillus acidophilus*, *Lactococcus lactis*, *Lactobacillus casei*, *Streptococcus thermophilus*, *Lactobacillus bulgaricus*) or yeast or other suitable inoculi for the production of soy milk (Column 6, lines 20-28). From line 49 to 64 of

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<sup>1</sup> While Matsuura does indeed go on further to make a cheese-like product out of the milk, a soy milk product is first prepared.

column 6 of Yang, an exposition on the effectiveness of the *Bifidobacterium longum* strains in passing through gastric acid with increased survivability is found.

The Appellants have not addressed these reasons for combining the references. The Appellants' response is limited to the argument that at best one of ordinary skill in the art would only have expected differences in flavor based upon the teachings and suggestions of the prior art (Appeal Brief, lines 6-10).

The motivation relied upon by the Examiner to make the prior art combination does not need to be the same as the problem being addressed by the Appellants. See In re Beattie, 974 F.2d 1309, 24 USPQ2d 1040 (Fed. Cir. 1992) (As long as some motivation or suggestion to combine the references is provided by the prior art taken as a whole, the law does not require that the references be combined for the reasons contemplated by the inventor).

Turning to the argument that the combination of references fails to disclose the invention as claimed, the Appellants focus on the term "dehypocotyl" and state that Matsuura's process:

fail[s] to teach or suggest a step for contacting a dehulled and a "dehypocotyl" whole soybean in warm water. In other words, Matsuura et al. only requires the use of dehulled soybeans in producing the soybean milk. Nowhere in the Matsuura et al. reference, including the Examples, does Matsuura et al. teach the use of dehypocotyl whole soybeans. Thus, Matsuura et al. fails to teach or suggest an important claimed element in a claimed process step of the present invention. (Emphasis in original) (Appeal Brief, page 12, line 16-page 13, line 3)

The Examiner asserts that the Appellants' own specification belies this statement by stating that any conventional soybean milk can be used (Examiner's Answer, page 7, lines 16-23) and that the examples and comparative examples of the invention in the

declaration are said to “use the same soybean milk” (Examiner’s Answer, page 8, line 7).

By way of background, we note that our research reveals that legumes (including soybeans) consist of an outer seed coat (testa or hull) and the embryo, with cotyledons being the predominant structure of the latter. The seed coat may be removed to provide cotyledons substantially free of seed coat or testa, that is, hulled legumes.<sup>2</sup> The effect of the cotyledon and its content upon flavor is well known. If the cotyledon is damaged and its enzymes released, a beany or grassy flavor may be imparted into the food products (US Patent 4,259,358, column 3, lines 27-32; US Patent 4,748,038, column 5, line 42 et seq.).

The Examiner pointed out that “The recited use of ‘dehypocotyl’ soybeans has no patentable bearing on the claimed invention, as it was a well-known common step in the production of soybean milk in the art, whether specifically recited or not” (Examiner’s Answer, page 8, lines 1-3)<sup>3</sup>. Thus, the Examiner has concluded that the hypocotyl is usually removed from soybeans when preparing them for soy milk. However, the Examiner has pointed us to no evidence in the record that supports this conclusion, and efforts on our part to determine whether this is a “well-known common step” have proved fruitless with the limited resources immediately available to us.

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<sup>2</sup> See Kirk-Othmer, Encyclopedia of Chemical Technology, Fourth Edition, Volume 22, pp. 591 et seq., “Soybeans and Other Oilseeds” (1997, John Wiley & Sons) and US Patent 4,259,358, Column 5, line 63 – column 6, line 4.

<sup>3</sup> This is not the type of fact the PTO is free to take official notice of. See In re Spormann, 150 USPQ 449, 452 (CCPA 1966), In re Ahlert 424 F.2d 1088, 1091, 165 USPQ 418, 420-421 (CCPA 1970).

On this basis we cannot sustain the rejection. A conclusion of obviousness must be based on evidence, not on assertions made without any apparent evidentiary support. See In re Grasselli, 713 F.2d 731, 739, 218 USPQ 769,775 (Fed. Cir. 1983) (“it is fundamental that rejections under 35 U.S.C. §103 must be based on evidence comprehended by the language of that section.”); In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967) (“The Patent Office has the initial duty of supplying the factual basis for its rejection. It may not ...resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies” in the cited references.). At the barest minimum, our findings must be supported by substantial evidence. In re Gartside, 203 F.3d 1305, 1315, 53 USPQ2d 1769, 1776 (Fed. Cir. 2000).

As noted above, the presence of the hypocotyl and its rupture byproducts in the soy precursor may have a profound impact upon the flavor. Numerous attempts have been made to neutralize this flavor, by heating (US Patent 4,748,038; 4,409,256) blanching (US Patent 3,901,978) boiling unsteeped soybeans in an alkaline aqueous medium to inactivate enzyme before grinding (U.S. Patent 4,241,100), and grinding unsteeped soybeans in deoxygenated hot water from 70°C to boiling under anaerobic conditions (U.S. Patent 4,369,198). However, these references fail to suggest the removal of the cotyledon.

The Examiner states conclusorily that “[t]he recited use of “dehypocotyl” soybeans has no patentable bearing on the claimed invention, as it was a known common step in the production of soybean milk in the art, whether specifically recited or



not.” (Examiner’s Answer, page 8, lines 1-3). We ask: Where in the record is this supported by any evidence?<sup>4</sup>

The Examiner has also noted that the examples and comparative examples do not distinguish between dehulled and dehypocotyl soybeans and soybeans which have only been dehulled. However, the Examiner has the initial burden to put forth a proper prima facie case of unpatentability. Only when that burden is met does the burden of coming forward with evidence or argument shift to the applicant. In re Oetiker, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). A conclusion of obviousness must be based upon facts, not generality. Warner, 379 F.2d at 1017, 154 USPQ at 178; In re Freed, 425 F.2d 785, 788, 165 USPQ 570, 571 (CCPA 1970).

Finally, the Examiner has noted that the claims are put forth in a “Jepson-type” format and therefore the invention begins at step 5. (Examiner’s Answer, page 8, lines 7-11). This is simply incorrect. A Jepson claim contains very specific language (“wherein the improvement comprises”) and the preamble is intended to be limiting and an admission of the prior art. The present claims are not in Jepson format.

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<sup>4</sup> The Examiner states in the Examiner’s Answer that the Appellants have conceded “that a *prima facie* case of obviousness had been established” based upon a statement in the Advisory action referencing an interview on October 18, 1999. We have reviewed the Examiner Interview Summary Record (Paper No. 9) and find no record of such an important admission contained therein.

Summary of Decision

The rejection of claims 3-5 and 7-14 under 35 U.S.C. §103 is reversed.

**REVERSED**

CHUNG K. PAK  
Administrative Patent Judge

JAMES T. MOORE  
Administrative Patent Judge

LINDA R. POTEATE  
Administrative Patent Judge

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